

**Statement of Work**

**Transportable Interference Monitoring**

**And**

**Detection System**

**(TIMDS)**

**Trailer/Tower System**

## **1.0 System Introduction**

The Transportable Interference Monitoring and Detection System (TIMDS) is one of five platforms under the National Airspace System (NAS) Interference Detection, Location and Mitigation (IDLM CIP43.01) program. The TIMDS will provide for a temporary Radio Frequency Interference (RFI) resolution system that is capable of being moved and then setup at a strategic location to address a constantly changing RFI environment affecting the NAS Communications, Navigation and Surveillance (CNS) services including Global Positioning System (GPS) signals.

RFI degrades and can detrimentally affect ground and satellite based NAS CNS systems. RFI causes corruption and potential loss of fundamental voice and/or data information required for safe air traffic control of aircraft utilizing the Federal Aviation Administration's (FAA) NAS. Since 1995, the FAA has experienced an average of 1,676 RFI events per year. RFI events cause unnecessary delays to efficient aircraft movement in the NAS and can potentially reduce established safety standards.

With the need to combine mission requirements in new equipment, the TIMDS will also have the ability to assist in the verification of voice-data communications coverage by including VHF and UHF transmitters and receivers and the capability of installing a compatible antenna on the tower subsystem for transmitting.

## **2.0 Overall TIMDS Requirement**

The TIMDS will consist of the following assemblies/sub-systems:

1. Towing (brake control, signal and running lights, stability control, connection to towing vehicle);
2. Tower mounted, telescoping tower;
3. Equipment shelter with environmental control for heat, cooling and humidity;
4. "Shore power" capabilities;
5. Engine Generator for power in the event of the absence of or loss shore power;
6. Storage container for tower/trailer tools and accessories;
7. Cable storage reels.

#### **A. Tower/Trailer Requirements – Transport Configuration:**

1. The tower / trailer in the transport configuration shall be less than 12 feet in height, 8 feet in width, and 23 feet in length.
2. The basic TIMDS trailer/tower/shelter weight shall be less than or equal to 8,000 pounds.
  - a. The trailer shall accommodate the payload weight of less than or equal to 1,000 pounds of Government Furnished Equipment (GFE) that shall be installed within the cargo shelters.
  - b. Shall be compatible with a full size SUV or Pickup Truck such as the Chevrolet Tahoe or Silverado 1500 type or equivalent.
  - c. Towing shall not require any special equipment with exception of:
    - i. Class 4 towing hitch/receiver,
    - ii. Disconnect electrical cabling for trailer lights (running and signal) and braking control.
    - iii. Stability control (anti-sway) device to ensure safe transport at all speeds less than or equal to 65 miles per hour.
    - iv. Locking system to secure the trailer to the vehicle hitch.
    - v. Towing chains as back up safety device between the trailer and towing vehicle.
3. Trailer tires shall be highway rated.
  - a. A full size spare tire must be provided.
4. Basic trailer shall be tandem axle.
5. Shall include electric trailer brakes as required for the total trailer weight (Basic Trailer Weight + 1000 pounds).
6. Shall have tower securing device (s) to ensure that the tower does not move or shift during transport.
7. Shall comply with all Department of Transportation (DOT) regulations for trailer safety on public roads including, but not limited to:
  - a. Appropriate running and brake lighting,
  - b. Trailer hitch securing, locking, and secondary safety chains,
  - c. Trailer tongue weight, weight distribution and overall road worthy stability.
8. Wide load or chase vehicle requirements are not acceptable.

#### **B. Tower/Trailer Requirements – Deployed Configuration:**

1. Extended tower height shall be less than or equal to 50 feet.
  - a. Maximum height of tower is dependent upon the basic trailer/tower/shelter weight as specified in paragraph A.1 above.
2. The tower and trailer will be self-supporting in normal weather, wind loading less than or equal to sustained 25 miles per hour with no guy wires needed.
  - a. For weather conditions, wind loading above sustained 25 mph and below or equal to 50 mph, guy wires will be anchored to the trailer “outriggers” and with no guy wire anchors into the ground.

3. The trailer and extended tower shall not sustain damage due to the wind loading exerted by sustained winds of less than or equal to 75 mph on the tower and antenna suite.
4. The tower shall conform to FAA-STD-019e (Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements) for lightning protection and grounding.
5. The tower must be able to be deployed by one person with the minimum use of outside support.
  - a. This includes tower site selection, “outrigger” and tower deployment.
  - b. The tower shall be raised manually with two winches, one winch for raising the tower from the transport position and one winch for extending the tower.
    - i. The use of electrically powered winches will be an option but not the primary method.
  - c. The tower shall be fully operational from the transport configuration to the fully deployed configuration by one person within two (2) hours.
6. Tower/trailer construction will allow for periodic maintenance of the basic TIMDS system by one person with a minimum of disassembly.
7. Two cable reel systems will be provided in order to store both the RFI resolution electronic interface cables and power cables during trailer transport and storage.

### **C. Equipment Enclosure Requirements**

1. Enclosure size will be a minimum 40” width x 72” length x 75” height.
  - a. The equipment shelter will be large enough to house all electronic equipment and battery backup.
  - b. The shelter will also be large enough to provide room for a person to stand and work on the GFE equipment installed.
2. An enclosure for the GFE RFI resolution equipment will be installed on the trailer and must be environmentally controlled to include heat, cooling and humidity.
3. Primary power will be provided by commercial power or “shore power” (110 volt, 60 Hz, 60 amps) connection..
  - a. If primary power is lost automatic switchover to battery backup will be provided.
  - b. Electrical generator must be provided.
  - c. Generator must be gas powered.
    - i. The engine generator must have the capability of being started at the generator or from within the equipment shelter.
    - ii. Fuel tank for the generator must have a minimum of 20 gallons of usable fuel capacity.
    - iii. The fuel tank must conform to all OSHA/EPA/AFPA fuel storage regulations.
    - iv. The generator must be placed on line manually by the operator.
    - v. Generator current draw capacity must be a minimum of 60 amps.
4. The enclosure must also protect the installed electronics from theft and vandalism.

5. A signal/control cable connector interface panel must be provided for a minimum of 6 coaxial and multi-conductor cables.
  - a. This panel will provide protection from vandalism and weather damage to the cables and connectors entering the shelter.
6. A panel for external power interface must be provided.
  - a. This panel will provide protection from vandalism and weather damage.
  - b. This panel must be separate from the coaxial and multi-conductor interface panel.
  - c. This panel must be large enough to provide room for one 30 amp marine rated power connector and power ground.
    - i. "Marine Rated" is defined as water proof, locking power connecting.
7. Two cable reels must be provided for power and system cable storage.
  - a. Cable reels must be manually operated

**E. Acceptance testing will be performed by FAA William J Hughes Technical Center (WJHTC) personnel.**